

Comprehensive Exam Question: Translational

Many neurodegenerative diseases present histological markers that indicate pathology associated with accumulation of misfolded proteins. Since many of these accumulations are present in tissue and cells at the time of death, it remains unclear whether they represent events leading to neuronal dysfunction and death associated with injury and disease, or represent an adaptive response by the nervous system to preserve the integrity of surviving cells and tissue.

- a) Discuss in detail the issue of whether protein accumulations in neurodegenerative diseases are instigators of pathological loss of neurons or are a protective response in surviving neurons.
- b) Compare and contrast two types of accumulation: amyloid plaques in Alzheimer's disease and Lewy Bodies in Parkinson's disease.
- c) Describe cellular processes known, or believed to, contribute to the evolution of these accumulations, current efforts to address these accumulations as targets for therapy, and novel approaches that you propose with plaques and Lewy bodies as targets for therapy.

For overall evaluation of your answer, the three parts will be weighted equally.

Reminders from the handbook

(<http://neuroscience.msu.edu/graduate/handbook/requirements.html#IFA>):

Answers should be between 10 and 15 typed double-spaced pages in length, excluding references. Students can use class notes, textbooks, internet resources and the peer-reviewed literature to formulate their answers. However, students are expected to work independently when preparing their answers. Specifically, students are not to collaborate with other students, faculty, or colleagues in preparing their answers and are expected to strictly adhere to professional ethical standards that prohibit plagiarism. During the exam, students should direct any questions they might have about exam questions to the Comprehensive Exam Coordinator.